studies can be used to apply genotyping of polymorphic alleles encoding drug-metabolizing enzymes to the identification of an individual's drug responsiveness phenotype. This knowledge, when applied to dosing or drug selection, can avoid adverse reactions or therapeutic failure and thus enhance therapeutic or prophylactic efficiency when treating a subject with a GLUTX modulator, such as a modulator identified by one of the exemplary screening assays described herein.

## XII. Monitoring of Clinical Trials

Monitoring the influence of agents (*e.g.*, drugs, compounds) on the expression of GLUTX or the activity of GLUTX can be applied not only in basic drug screening, but also in clinical trials. For example, the effectiveness of an agent determined by a screening assay as described herein to increase GLUTX gene expression, increase GLUTX polypeptide levels, or upregulate GLUTX activity, can be monitored in clinical trials of subjects exhibiting decreased GLUTX gene expression, decreased GLUTX polypeptide levels, or downregulated GLUTX activity. Alternatively, the effectiveness of an agent determined by a screening assay to decrease GLUTX gene expression, decrease GLUTX polypeptide levels, or downregulate GLUTX activity, can be monitored in clinical trials of subjects exhibiting increased GLUTX gene expression, increased GLUTX polypeptide levels, or upregulated GLUTX activity. In such clinical trials, the expression of GLUTX or activity of GLUTX can be used as a measure of the responsiveness of a particular cell.

For example, and not by way of limitation, genes, including GLUTX, that are modulated in cells by treatment with an agent (*e.g.*, a compound, drug, or small molecule) that modulates GLUTX activity (*e.g.*, identified in a

screening assay as described herein) can be identified. Thus, to study the effect of agents on a given disorder, for example, in a clinical trial, the level or expression of GLUTX or other genes implicated in the disorder can be measured. The levels of gene expression (*i.e.*, a gene expression pattern) can be quantified by Northern blot analysis or RT-PCR, as described herein, or alternatively by measuring the amount of polypeptide produced, by one of the methods described herein, or by measuring the levels of activity of GLUTX or other genes. In this way, the gene expression pattern can serve as an indicative marker of the physiological response of the cells to the agent. Accordingly, this response state can be determined before, and at various points during, treatment of the individual with the agent.

In a preferred embodiment, the present invention provides a method for monitoring the effectiveness of treatment of a subject with an agent (*e.g.*, an agonist, antagonist, peptidomimetic, polypeptide, nucleic acid, small molecule, or other drug candidate identified by the screening assays described herein) comprising the steps of (1) obtaining a pre-administration sample from a subject prior to administration of the agent; (2) detecting the level of expression of a GLUTX polypeptide or GLUTX mRNA in the pre-administration sample, or the level or activity of GLUTX; (3) obtaining one or more post-administration samples from the subject; (4) detecting the level of expression of GLUTX polypeptide or GLUTX mRNA or the level or activity of the GLUTX polypeptide in the post-administration sample; (5) comparing the level of expression of GLUTX mRNA in the pre-administration sample with that in the post-administration sample, or comparing the level or activity of the GLUTX polypeptide in the pre-administration sample with that in

the post-administration sample; and (6) altering the administration of the agent to the subject accordingly.

## XIII. Screening Assays for Compounds that Modulate GLUTX Expression or Activity

The invention also encompasses methods for identifying compounds that interact with GLUTX (or a domain of GLUTX) including, but not limited to, compounds that interfere with the interaction of GLUTX with transmembrane, extracellular, or intracellular proteins which regulate GLUTX activity and compounds which modulate GLUTX activity. Also encompasses are method for identifying compounds which bind to GLUTX gene regulatory sequences (*e.g.*, promoter sequences) and which may modulate GLUTX gene expression.

The compounds which may be screened in accordance with the invention include, but are not limited to peptides, antibodies and fragments thereof, and other organic compounds that bind to GLUTX and increase or decrease activity.

Such compounds may include, but are not limited to, peptides such as, for example, soluble peptides, including but not limited to members of random peptide libraries; (Lam *et al.*, *Nature* 354:82-84, 1991; Houghten *et al.*, *Nature* 354:84-86, 1991), and combinatorial chemistry-derived molecular library made of D- and/or L configuration amino acids, phosphopeptides (including, but not limited to, members of random or partially degenerate, directed phosphopeptide libraries; Songyang, *et al.*, *Cell* 72:767-778, 1993), antibodies (including, but not limited to, polyclonal, monoclonal, humanized, anti-idiotypic, chimeric or single chain antibodies, and FAb, $F(ab')_2$ and FAb expression library fragments, and epitope-binding fragments thereof), and small organic or inorganic molecules.